

SOC Assignment 2

Execution:

Preferred Method: Run the start.sh file in the terminal. First it will execute all the enactments with Buyer-A and will stop at some point. Then press any key to start with the Buyer-B and wait until its execution finishes. Once the execution is complete press Ctrl+C to exit. Now the start.sh can be safely retrIGGERED to repeat the testing otherwise the Processes running the python files need to be killed manually with their PIDs to re-run the start.sh file.

Alternate Method: Launch all the agents except Buyer-A and Buyer-B on multiple terminals by executing python3 AgentName.py. Once all the other agents are ready, launch any one from Buyer-A/Buyer-B first and the other Buyer next and see the enactments executing.

Note: Execute Buyers one after the other. They cannot be executed parallelly due to port binding issues from bungee. Attaching the output.txt file for reference along with the code.

Protocol:

The protocol contains information about all the interactions happening between actors like Buyer, Merchant, Shipping Service, PayPal and eBay. In our case the implementation is done using bungee framework for the agents: Buyer-A, Buyer-B, Merchant-A, Shipping-A, PayPal-Org and eBay-Org.

Roles:

a. Buyer:

i. Actions

- Submits order to eBay, with address and name as order detail.
- Send cancel order request to eBay.
- Submits payment to eBay for the order.
- Receives item from shipping service.
- Receives refund from eBay through PayPal for canceled order.
- Receives refund from eBay through Paypal for a merchant rejected order.
- Receives refund from eBay through PayPal for defective item.
- Submit review of the transaction to eBay.

ii. Enactments

■ Buyer A

- a. Buyer can place an order followed by payment and review.

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- b. Buyer cannot submit review without properly placing the order .i.e without both order and payment being done.
- c. Buyer can instantly cancel the order if the payment is still not²done for it.
- d. Buyer can cancel the order only before shipping. Once the order is cancelled the buyer gets refunded for it.
- e. Buyer cannot cancel the order once the shipping has started. He/She has to receive the item and payment will be sent to the merchant.
- f. Let's say there is a case where the buyer has properly placed the order but while shipping the item got damaged. In that case the buyer gets refunded for the defective item.

■ **Buyer B**

- a. And also if a merchant rejects the order due to some reason like out of stock, the order gets cancelled and the buyer gets refunded for it.
- b. If a merchant decided to cancel the order due to reasons like out of stock, and suddenly if the buyer itself cancelled it then for that also the buyer gets refunded.

b. eBay:

i. Actions

- Receives order from buyer and forwards it to the merchant if payment is done for it.
- Sends payment to merchants through PayPal with a hold request.
- Receives tracking number from merchant and updates it on the eBay website for the buyers to track.
- Releases the fund to merchants through PayPal when received delivery confirmation from the merchant.
- Notifies the buyer about the shipping details of an item.
- Asks PayPal to refund the buyer with a withdrawal request from the buyer.
- Also asks PayPal to refund the buyer if an order is rejected by the merchant.
- Asks PayPal to refund the buyer with defective notification from the merchant.
- Notifies the merchant the order has been canceled.

ii. Enactments

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- Doesn't allow the buyer to submit a review if an order is not properly placed.
- Allows the merchant to submit a transaction review at any point of time once an order is properly placed .i.e along with payment.
- Doesn't allow the buyer to cancel an order once the order is sent for shipping.
- Keeps all the parties up to date with all the information about the order.
- Cancels the payments for merchants which were on hold while refunding a buyer through Paypal.

c. Paypal:

i. Actions

- Receives funds from eBay.
- Notifies Merchant that the payment has been put on hold.
- Releases funds to merchants when eBay confirms delivery.
- Refund buyer with refund request from eBay if buyer canceled the order.
- Refund buyer with refund request from eBay if merchant rejected the order.
- Refund buyer with refund request from eBay if item defective.

ii. Enactments

- Performs all the enactments suggested by eBay for payments and refunds.
- Doesn't take a decision on its own as it is an automated system.

d. Merchant:

i. Actions

- Receives order details from eBay and payment notification from PayPal.
- Receives message from eBay saying order has been canceled, and takes no further action.
- Sends the item to the shipper for shipment.
- ³Uploads tracking number to eBay.
- Passes delivery confirmation from Shipping service to eBay.
- Notifies eBay for defective items to refund buyers.
- Submit review of the transaction to eBay.

ii. Enactments

- Decides whether to accept or reject the order based on the stock available.
- Submits transaction review at any point of time once the order has been placed.

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- Takes no further action on a cancelled order but can still submit a review if there is an ethics violation.
- Takes responsibility for sending the order to shipping service and provides updates on the shipping status to eBay.

e. Shipping Service:

i. Actions

- Receives order information from merchant.
- Packs and ships the item to the buyer.
- Provides tracking numbers to merchants.
- Confirms delivery to merchant with tracking number.
- Reports defective items to merchants.

ii. Enactments

- Reports if an item gets defective during the shipping and delivery process.
- Shares the shipping and tracking information along with delivery confirmation with the merchant.
- ⁴Delivers the order at the buyer's address.

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